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3. COTYLEDON ORBICULATA L.*

The accompanying plate of what seems to be a form of this species is from living material received from Mr. C. R. Orcutt.

Cotyledon orbiculata is one of the representatives of the true Cotyledons of Africa, characterized by having the flowers on the numerical plan of 5, with a strongly gamopetalous corolla much longer than the calyx and with recurved lobes, and ten stamens inserted low in its throat. It is said to have been introduced into Europe in 1690, but, like many of the old fashioned succulents of decorative value, it is more frequently found in the hands of amateurs than dealers. It is a perennial shrub with a fleshy stem about three-quarters of an inch thick, and a span or two high, bearing large half elliptical leaf scars each marked by three rather large bundle scars, and a tuft of about four pairs of ascending spatulate entire shortly acuminate very fleshy leaves about 3 inches long, more or less closely dotted with corky points, the margins of the leaves being frequently somewhat rolled backwards. The upper part of the stem, the leaves and the inflorescence, are densely coated with white.

The flowers are borne on a stout naked peduncle about a span high, bearing a few caducous bracts, and subdichotomously branched above, the branches recurved and the ultimate peduncles, which are somewhat over a half inch long, pendent, so that the flowers hang nearly vertically. The calyx is short, with deltoid subacuminate segments about an eighth of an inch long, more or less tinged with red. The corolla is about an inch long when fully expanded, the recurved lobes being about half an inch in length, and is of a delicate flesh color shaded at times with darker red or

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* Linnaeus, Species Plantarum, 1753, 429; DC. Plantes Grasses, ii. pl. 76; Curt. Bot. Mag. ix. pl. 321; Don, Hist. Dichlamyd. Plants, iii. 109.

light green, one margin of each segment being nearly white on the back, while the inner face of all is more yellow in tint. The lower half of the broad tube is obtusely 5-sided, and the tube is widest at about the middle.

While the stamens are all inserted on the lower part of the corolla tube, those opposite the lobes have their filaments broadly dilated at this point, below which they appear as mere lines on the inner side of the corolla, while the alternate ones are compressed from the sides above their insertion, below which they extend to the receptacle as prominent ridges closely applied to the grooves which separate the five pistils. At their insertion, the filaments are strongly bearded. On the back of each pistil, near its base, is a yellow cup-shaped nectary, forming a pocket covered by the fleecy nectar guard, and separated from its fellows by the decurrent filament ridges already described. All of the filaments converge to the center of the flower just above their insertion, where they lie closely applied to the pistils, with which they protrude for a short distance, their ends being slightly divergent, so as to remove the thin cordate anthers a short distance from the minute terminal green stigmas. These become moist and receptive only after the anthers have shed their pollen, thus insuring a probability of cross-fertilization by aid of visitors attracted by the nectar secreted in the pockets on the backs of the pistils and protected by the tufts of hairs at the base of the stamens.

An interesting feature of the stamens is the changes which the anthers undergo during anthesis. When the corolla begins to unfold, they are narrowly oblong, the connective tipped with a small glossy gland; but in dehiscing they contract to a broad heart shape, expelling the pollen in long worm-like threads which are held by one end until brushed away.

The form here figured possesses somewhat longer leaves with more recurved margins than are shown in the illustrations referred to, and appears to stand between the varieties *obovata* and *oblonga* of the Prodromus. It is closely related to *C. coruscans* Haworth, as figured by Sims in the Botanical Magazine, lii. pl. 2601, but the latter species is characterized by thick margined channeled leaves, while those of *orbiculata* are rather acute on the margin, the recurving of which is not sufficient to render them channeled.

Explanation of plate 29.—Fig. 1, habit of *Cotyledon orbiculata,* half size; fig. 2, leaf, natural size; fig. 3, flower, and fig. 4, opened flower, natural size; fig. 5, base of pistil with nectar gland, and longitudinal section of pistil and gland, × 2; fig. 6, young and old stamens, × 2.

4. CUCUMIS MELO DUDAIM (L.).*

Through the Southern States a small melon is frequent in melon patches where volunteer plants are almost certain to appear each year among the musk melons, and the opinion seems to be quite prevalent that the vines, which resemble those of the ordinary melon, originate from degenerate seeds of the latter.

At first very dark green, and quite destitute of grooves, but with about ten longitudinal stripes and numerous irregular spots of lighter green,—then resembling a diminutive watermelon,—the fruit, which varies in size from that of an apricot to that of an orange, changes to a deep orange or maroon at maturity, and the paler stripes and blotches then assume a lemon yellow color. Though not at all grooved, it possesses the firm wall and central fibrous seed mass of the musk melons, but is gelatinous toward the center instead of becoming hollow as is usual with the latter; and when ripe assumes an unusually pronounced cantaloup odor.

All through the South these melons are known as "pomegranates," though they are in every way unlike the true pomegranate,—the fruit of the shrubby *Punica*

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* Cucumis Melo Dudaim Naudin, Ann. Sc. Nat. 4 Ser. xi. (1859), 69. Pailleux and Bois, Potager d' un Curieux, 342. C. Dudaim Linn. Sp. Plant. ii. 1011. *C. Melo* Cogniaux, Monogr. Phan. iii. 484.—Synonymy in Naudin and Cogniaux.